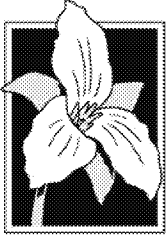


NORTHWEST ENVIRONMENTAL ADVOCATES



August 31, 2015

Gina McCarthy, Administrator
U.S. Environmental Protection Agency
USEPA Ariel Rios Building (AR)
1200 Pennsylvania Avenue N.W.
Washington, DC 20004

Certified Mail; Return Receipt Requested

**Re: Follow Up to October 28, 2013 Northwest Environmental Advocates'
Petition for Rulemaking on Water Quality Criteria for Toxics in the
State of Washington**

Dear Ms. McCarthy:

In light of Washington Governor Jay Inslee's July 30, 2015 announcement that his state's Department of Ecology will not be submitting new and revised human health criteria to EPA for approval, it is likely that EPA is now moving towards a federal promulgation of such criteria in accord with its previous commitments to Washington's tribes. It is, therefore, an appropriate time for us to remind EPA that it must also step in and address Washington's failure to update its aquatic life toxic criteria. As our October 28, 2013 Petition for Rulemaking on Water Quality Criteria for Toxics in the State of Washington to you noted, Washington has largely failed to adopt new and revised aquatic life criteria for toxics, consistent with the requirements of the Clean Water Act (CWA), since it adopted them over two decades ago.

Despite the state's egregious record of inaction—including for pollutants known to harm species listed as threatened or endangered under the Endangered Species Act (ESA) at levels allowed by Washington's water quality standards—almost two years have gone by without any communication from EPA in response to our petition. For this reason, we are writing to urge you to make the determination and engage in the federal promulgation with regard to Washington's aquatic life criteria as our petition requested. The need for EPA action certainly has not waned since we asked the agency to step in. If anything, the Washington Department of Ecology's having just concluded a failed and highly politicized attempt to update its human health criteria makes it exceedingly unlikely that the state will soon begin, let alone complete, updating its aquatic life toxic criteria.

NWEA's Petition

As NWEA's petition described, with the exception of aquatic life criteria for ammonia, chronic marine copper, and chronic marine cyanide, Washington last adopted new or revised numeric aquatic life criteria for toxic pollutants on November 25, 1992. That was over 22 years ago. As the petition also pointed out, EPA has approved Washington water quality standards at least five times since 1992 and each time EPA has failed to determine that Washington's aquatic life criteria were inconsistent with CWA section 303(c)(2)(B) for a substantial list of toxic

www.NorthwestEnvironmentalAdvocates.org

P.O. Box 12187, Portland, OR 97212-0187 Phone (503) 295-0490 Fax Upon Request

Printed on 100% post-consumer recycled, non-de-inked, non-bleached paper

ED_002991_00014524-00001

pollutants. The petition identified 19 pollutants for which EPA had, at that time, issued new or revised recommended 304(a) aquatic life criteria.¹

EPA is well aware of the hazards of toxic chemicals to aquatic species in Washington's waters, particularly those listed as threatened or endangered if for no other reason than EPA's having the results of recently-completed ESA consultations on certain toxic criteria in other Region 10 states. In June, the U.S. Fish and Wildlife Service (FWS) completed a biological opinion on EPA's 1996, 1997, and 2005 toxic criteria approval actions for Idaho, finding jeopardy for eight pollutants (arsenic, copper, lead, nickel, selenium, zinc, cyanide, and mercury) and a low-end hardness floor for metals.² Likewise, the National Marine Fisheries Service (NMFS) recently completed its biological opinion on the same Idaho criteria, making a jeopardy conclusion for five of those pollutants (arsenic, copper, selenium, cyanide, and mercury) and the hardness floor.³ Before that, NMFS issued a biological opinion finding jeopardy for Oregon's cadmium, copper, aluminum, and ammonia criteria.⁴ Many of the species addressed by the jeopardy opinions in Oregon and Idaho are also present in Washington waters.

Toxics in Puget Sound

Levels of these and other toxic pollutants are among the reasons that EPA has long been concerned about the health of Puget Sound. EPA features the toxic contamination of the Southern Resident killer whales, Pacific herring, and harbor seals in Puget Sound on its website as evidence of its ongoing concerns about pollution of Washington's waters.⁵ In 2006, EPA

¹ The pollutants included: acrolein, arsenic, carbaryl, cadmium, chromium (III), chromium (VI), copper, diazinon, dieldrin, endrin, gamma-BHC (Lindane), mercury, nickel, nonylphenol, parathion, pentachlorophenol, selenium, tributyltin, and zinc. NWEA neglected to include the then-recently updated recommended aquatic life criteria for ammonia. 78 Fed. Reg. 52192 (Aug. 22, 2013).

² FWS, *Biological Opinion for the Idaho Water Quality Standards for Numeric Water Quality Criteria for Toxic Pollutants*, 01EIFW00-2014-F-0233 (June 25, 2015).

³ NMFS, *Final Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Water Quality Toxics Standards for Idaho* (May 7, 2014).

⁴ NMFS, *Jeopardy and Adverse Modification of Critical Habitat Biological Opinion for the Environmental Protection Agency's Proposed Approval of Certain Oregon Administrative Rules Related to Revised Water Quality Criteria for Toxic Pollutants* (Aug. 14, 2012).

⁵ See EPA, *Salish Sea, Southern Resident Killer Whales*, <http://www2.epa.gov/salish-sea/southern-resident-killer-whales> (last visited Aug. 8, 2015) ("Recent declines in orca population may be linked to threats such as toxic pollution[.]"); EPA, *Salish Sea, Toxics in the Food Web: Pacific Herring and Harbor Seals* <http://www2.epa.gov/salish-sea/toxics-food-web-pacific-herring-and-harbor-seals> (last visited Aug. 8, 2015) ("PCBs and PBDEs are found in all harbor seals of the Salish Sea, but levels are declining. Likewise, levels of PCBs and PDBEs in Pacific herring are generally declining or remaining stable. However, PCBs in herring in southern Puget Sound are above levels that may cause negative effects in the food web.").

issued a report on the ecosystem health of the Puget Sound and Georgia Basin.⁶ The agency concluded that the ecosystem indicators of “river, stream and lake quality,” “marine species at risk,” “toxics in harbor seals,” and “marine water quality” were all on a downward trajectory. *See id.* at 2. EPA focused on the effect of industrial activities and polluted surface runoff of metals and organic compounds, noting that killer whales “are some of the most contaminated marine mammals in the world because they have bioaccumulated these chemical contaminants through the entire food web,” and that “[t]oxic chemical concentrations in Killer Whales and contamination of food sources” are among the reasons the species has been listed under the ESA. *Id.* at 119-120.⁷ Both killer whales and harbor seals were described by EPA as indicators of the decline of the Puget Sound Georgia Basin ecosystem.⁸ While EPA’s report made passing

⁶ EPA, *Puget Sound Georgia Basin Transboundary Ecosystem Indicator Report* (2006) available at http://www.epa.gov/pugetsound/pdf/indicators_report.pdf (last visited Aug. 8, 2015). This report discusses studies reported in 2002, showing that polybrominated diphenyl ethers (PBDEs) in harbor seals had increased 1500 percent between 1984 and 2003, findings that EPA said were consistent with those of state agencies that have demonstrated “elevated [persistent bioaccumulative toxic] contamination of sediments and bottom fishes in the urbanized bays of central Puget Sound compared to southern Puget Sound and the Georgia Basin.” *Id.* at 129, 131, 132.

⁷ *See* NMFS, *Endangered and Threatened Wildlife and Plants: Endangered Status for Southern Resident Killer Whales, Final Rule*, 70 Fed. Reg. 69903 (Nov. 18, 2005); *also see id.* at 69911 (identifying as activities that could result in a violation of ESA section 9 “take” prohibitions to include “[d]ischarging or dumping toxic chemicals or other pollutants into areas used by Southern Resident killer whales.”). The subsequently-designated critical habitat includes the waters of Puget Sound. 71 Fed. Reg. 69054 (Nov. 29, 2006). *See also*, EPA, NMFS, *Potential Effects of PBDEs on Puget Sound and Southern Resident Killer Whales A Report on the Technical Workgroups and Policy Forum* (July 24, 2013), available at http://www.eopugetsound.org/sites/default/files/features/resources/PBDEs_Puget_Sound_Report.pdf (last visited Aug. 8, 2015).

⁸ *See, e.g.*, EPA, *Puget Sound Georgia Basin Ecosystem Indicator Report, Executive Summary Marine Species at Risk* (Oct. 2006) available at http://www.epa.gov/pugetsound/pdf/Summary_Marine_Species_at_Risk_Indicator.pdf (last visited Aug. 13, 2015) at 2 (“The Puget Sound Georgia Basin has a long legacy of intensive industrial activities including industrial wastewater discharges, mining, pulp and paper mills, oil refineries, and smelting. Contamination from these sources is exacerbated by overall polluted surface runoff. Contaminants of concern include heavy metals, organic compounds such as polycyclic aromatic hydrocarbons (PAHs, carcinogens created through petroleum combustion), flame retardants, phthalate esters (used in plastics and cosmetics) and polychlorinated biphenyls (PCBs).”). *See also*, EPA, *Puget Sound Georgia Basin Ecosystem Indicator Report, Executive Summary, Toxics in Harbor Seals* (Oct. 2006) available at http://www.epa.gov/pugetsound/pdf/Summary_Toxics_in_Harbor_Seals_Indicator.pdf (last visited Aug. 13, 2015) at 1 (“A study of Puget Sound and Strait of Georgia harbor seal prey showed that the Puget Sound harbor seal food basket is seven times more contaminated with PCBs (2.90 mg/kg lipid) than the Strait of Georgia food basket (0.41 mg/kg lipid). Further, PBDE concentrations were almost five times higher in the Puget Sound seal food basket. Differences in prey consumed did not explain the differences in contamination between the two harbor seal populations, but was rather attributed to an effect

reference to Washington's water quality standards, it did not discuss their outdated status or their regulatory relevance to resolving the pollution problems that EPA identified. *Id.* at 61, 67, 151.

Given EPA's interest in the killer whale, the agency has no doubt followed developments pertaining to the factors that may have caused the decline or may be limiting recovery of the species, such as toxic chemicals that accumulate in top predators. NMFS' recovery plan for the killer whale, for example, discusses the whales' vulnerability to accumulation of toxic contaminants because of the high trophic level of their prey and their long life expectancy.⁹ The recovery plan noted that "there are questions about whether permit requirements and standards" are sufficiently protective, citing the Puget Sound Action Team's report that "between July 2004 and June 2006, the Washington Department of Ecology reissued 96 individual NPDES permits in the Puget Sound Basin, but stated it was not known if these actions reduced pollutants to the Sound." *Id.* at II-99. The killer whale recovery plan did point to EPA and the Services' national plan to improve consultation procedures on water quality standards, *id.* at II-101, but as EPA knows, these plans have long failed to materialize and now have been extinguished. NMFS identified as a recovery management measure the "adoption of revised water and sediment quality standards based on available information[.]" *Id.* at V-12. However, such revisions are stymied if the Department of Ecology fails to even review the outdated criteria. The state's failure leaves no other mechanism than an Administrator's determination to implement this management measure. NMFS has not changed its views; in a more recent review of studies on the killer whale, NMFS reiterated the importance of "[w]orking to reduce chemical contamination in the whales' habitat and food."¹⁰

EPA must also be aware that a number of biological opinions on federal actions in Puget Sound have highlighted NMFS' concerns with adverse effects of toxic contaminants on the killer whale.¹¹ NMFS has also raised concerns with the effects of toxics on salmonids, which are both

of local contamination within Puget Sound. . . . Total PCBs in whole bodies of herring from Port Orchard and Squaxin (central and southern Puget Sound, respectively) were continued four to nine times higher than those from the Georgia Basin (Denman Island). The elevated levels of PCBs in Puget Sound herring are similar to levels measured in herring from the Baltic Sea, one of the more highly contaminated marine ecosystems in the world.").

⁹ NMFS, *Recovery Plan for Southern Resident Killer Whales (Orcinus orca)* (Jan. 17, 2008), available at http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/killer_whales/esa_status/srkw-recov-plan.pdf (last visited Aug. 12, 2015) at II-88.

¹⁰ NMFS, *Southern Resident Killer Whales: 10 Years of Research & Conservation* (June 2014), available at http://www.nwfsc.noaa.gov/news/features/killer_whale_report/pdfs/bigreport62514.pdf (last visited Aug. 12, 2015) at 10.

¹¹ See, e.g., NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the on-going National Flood Insurance Program carried out in the Puget Sound area in Washington State. HUC 17110020 Puget Sound* (Sept. 22, 2008), available at http://www.fema.gov/media-library-data/20130726-1900-25045-9907/nfip_biological_opinion_puget_sound.pdf (last visited Aug. 8, 2015). See *id.* at 42-43 ("Many types of chemicals are

killer whale prey and themselves ESA-listed.¹²

Likewise, EPA's role in the Puget Sound Partnership, a national estuary program administered by the agency under section 320 of the CWA, suggests it is likely well acquainted with the Washington Department of Fish & Wildlife's work that has highlighted "Puget Sound's physical geography and patterns of water movement [that] may exacerbate the problem of toxics in its organisms" and the "biological isolation of its resident fish and shellfish, potentially increasing their risk of exposure to toxic contaminants."¹³

Toxics in Stormwater Discharges

EPA must also be well aware of a considerable amount of information about toxic loading in Puget Sound from stormwater, much of which is regulated under NPDES permits for which EPA retains oversight. For example, as a member of its steering committee, EPA certainly knows about Ecology's 2009-2010 study of toxic loading to Puget Sound that was intended to "help guide decisions about how to most effectively direct resources to reduce toxic contamination in

toxic when present in high concentrations, including organochlorines, polycyclic aromatic hydrocarbons (PAHs), and heavy metals. . . . Organochlorines are also highly fat soluble, and accumulate in the fatty tissues of animals (O'Shea 1999, Reijnders and Aguilar 2002). Bioaccumulation through trophic transfer allows relatively high concentrations of these compounds to build up in top-level marine predators, such as marine mammals (O'Shea 1999). Killer whales are candidates for accumulating high concentrations of organochlorines because of their high position in the food web and long life expectancy (Ylitalo et al. 2001, Grant and Ross 2002). Their exposure to these compounds occurs exclusively through their diet (Hickie et al. 2007). High levels of persistent organic pollutants such as PCBs and DDT are documented in [Southern Resident Killer Whales] (Ross et al. 2000, Ylitalo et al. 2001). These and other chemical compounds have the ability to induce immune suppression, impair reproduction, and produce other adverse physiological effects, as observed in studies of other marine mammals (review in NMFS 2008). Immune suppression may be especially likely during periods of stress and resulting weight loss, when stored organochlorines are released from the blubber and become redistributed to other tissues (Krahn et al. 2002).")

¹² *Id.* at 98 ("Sediments washed from the urban areas and deposited in river waters include trace metals such as copper, cadmium, zinc, and lead (California State Lands Commission 1993). Pollutant loading in surface water is widely attributable to urban stormwater runoff. . . . Water temperature, turbidity, dissolved oxygen, pH, nutrients, and toxic chemicals/metals also affect water quality and the ability of surface waters to sustain listed salmonids. . . . [W]hen exacerbated by stormwater runoff, the acceptable range of these factors can be exceeded, altering or impairing biological processes and adversely impacting salmonids (Spence et al. 1996). . . . [T]he weight of evidence suggests that adult coho salmon, which enter small urban streams following fall storm events, are acutely sensitive to non-point source stormwater runoff containing pollutants that typically originate from urban and residential land use activities.").

¹³ WDF&W, *Toxic Contaminants in Puget Sound Fish and Shellfish*, http://wdfw.wa.gov/conservation/research/projects/marine_toxics/ (last visited Aug. 8, 2015).

Puget Sound.¹⁴ EPA must have known that Ecology compared the toxics data to outdated numeric criteria it had adopted in 1992.¹⁵ Similarly, a more recent 2015 study to establish a baseline of data on municipal stormwater quality and to identify chemicals of interest in stormwater also used Washington's outdated aquatic life criteria.¹⁶ Other toxics loading information routinely shows up in NMFS consultations pertaining to activities in Puget Sound. For example, a 2011 biological opinion commented:

The Washington State Department of Ecology estimates that Puget Sound receives between 14 and 94 million pounds of toxic pollutants per year, which include oil and grease, PCBs, phthalates, PBDEs, and heavy metals that include zinc, copper and lead (Washington Department of Ecology 2010). Several urban embayments in the Sound have high levels of heavy metals and organic compounds (Palsson et al. 2009). About 32 percent of the sediments in the Puget Sound region are considered to be moderately or highly contaminated (Puget Sound Action Team 2007), though some areas are undergoing clean-up operations that have improved benthic habitats (Puget Sound Partnership 2010).¹⁷

Likewise, given its concerns about Puget Sound stormwater, EPA undoubtedly is familiar with a

¹⁴ Ecology, *Focus on Puget Sound, Toxics in surface runoff to Puget Sound* (May 2011) at 1, available at <https://fortress.wa.gov/ecy/publications/SummaryPages/1103025.html> (last visited Aug. 8, 2015).

¹⁵ Ecology, *Control of Toxic Chemicals in Puget Sound: Phase 3 Data and Load Estimates* (April 2011), available at <https://fortress.wa.gov/ecy/publications/documents/1103010.pdf> (last visited Aug. 12, 2015). The study compared data to Washington aquatic life criteria for cadmium, copper, lead, mercury, zinc, total PCBs, and DDT. *Id.* at 46-56. Similarly, its conclusions are based on the criteria: "Stormwater runoff, particularly from commercial/industrial subbasins, did not meet water quality criteria or human health criteria for several parameters. These include dissolved copper, lead, and zinc; total mercury; total PCBs; bis(2-ethylhexyl) phthalate; several carcinogenic PAHs; and one pesticide." *Id.* at xix.

¹⁶ Ecology, *Western Washington NPDES Phase I Stormwater Permit, Final S8.D Data Characterization 2009-2013* (Feb. 2015), available at <https://fortress.wa.gov/ecy/publications/publications/1503001.pdf> (last visited Aug. 12, 2015), at 37; 12-13 ("Across all four land uses, copper, zinc, and lead were more often than not found to exceed (not meet) water quality criteria (Table ES-1). Dissolved zinc and copper in stormwater samples exceeded acute aquatic life criteria in 36% and 50% of the samples, respectively, over the three years of data. Mercury and total PCBs exceeded chronic aquatic life criteria in 17% and 41% of the samples, respectively.")

¹⁷ NMFS, *Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation Evaluation of 2010-2014 Puget Sound Chinook Harvest Resource Management Plan under Limit 6 of the 4(d) Rule Impacts of Programs Administered by the Bureau of Indian Affairs that Support Puget Sound Tribal Salmon Fisheries* (May 24, 2011), available at https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/NWR-2010-6051?overrideUserGroup=PUBLIC&referrer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH (last visited on Aug. 13, 2015) at 94.

number of NMFS biological opinions pertaining specifically to toxic pollutants from this source, as well as the scientific studies on which these opinions are based. For example, in its 2008 consultation on the National Flood Insurance Program in Puget Sound, *see* fn. 11, NMFS highlighted the adverse effects of pollutants in stormwater, noting that,

recent occurrences of pre-spawn mortality (PSM) in coho salmon have heightened our concern with stormwater quality. . . . adult coho salmon, which enter small urban streams following fall storm events, are acutely sensitive to non-point source stormwater runoff containing pollutants that typically originate from urban and residential land use activities. . . . a growing body of science . . . suggests it is likely that other salmonids, including listed salmonids, experience sub-lethal impacts from pollutants found in stormwater.

Id. at 98; *see also id.* at 98-99 (floodplain development increases pollution loading from stormwater and stormwater pollution contaminates sediments affecting salmonids). NMFS raised these same concerns in earlier consultations for federally-funded transportation projects.¹⁸ For example, a 2007 biological opinion addressed the regular discharge of “high concentrations of heavy metals (e.g. copper, lead, zinc) that exceed acute toxicity standards,” as well as river sediments contaminated with a wide range of pollutants, which “create lethal and sublethal effects to salmonids[.]” *Id.* at 18, 23 (specifically calling out copper levels that are “sufficient to inhibit salmonid olfaction” and zinc levels exceeding the threshold at which fish “lose their predatory avoidance behavior.”); *see also id.* at 29-34 (discussing lethal and sublethal effects to salmonids from water quality degradation within urbanized watersheds in the Puget Sound). As EPA knows, these pollutants are among those for which Washington has not updated its aquatic life criteria for over two decades.

EPA itself has been sufficiently concerned about toxic stormwater discharges to Puget Sound of these same pollutants to take regulatory actions against sources. In a 2013 news release, EPA

¹⁸ *See* NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Interstate 405 State Route 169 to Interstate 90 Congestion Relief – Renton to Bellevue Improvement, King County, Washington*. (6th Field HUCs, 171100120302, Cedar River and 171100120106, Lower Cedar River) (Jan. 3, 2007), available at https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/NWR-2006-1454?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH (last visited Aug. 9, 2015); *see also* NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Interstate 405 Congestion Relief and Bus Rapid Transit Projects – Renton Nickel Improvement, King County, Washington*. (HUC, 171100130399, Lower Green River and 171100120106, Lower Cedar River) (Sept. 20, 2006), available at https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/NWR-2005-6240?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH (last visited Aug. 13, 2015); *id.* at 28-35 (discussion of metals’ adverse effects to aquatic species); *id.* at 29 (“When they compared their results to the acute EPA Water Quality Criteria for dissolved copper (13 µg/L for 100 mg/L hardness), Baldwin et al., (2003) determined that a one-hour discharge at the acute EPA Water Quality Criteria could be expected to cause up to a 50 percent loss of sensory capacity among coho salmon in freshwater habitats.”).

wrote about its enforcement actions against four companies for discharging industrial stormwater to Puget Sound waterways.¹⁹ Charged with violations of NPDES permits or the Clean Water Act, together the sources had discharged the following pollutants: copper, zinc, mercury, arsenic, cadmium, and lead, all but one of which are subjects of NWEA's petition. EPA's release stated that "[t]hese pollutants harm the Puget Sound ecosystem and marine life," but it has apparently not see fit to ensure that the aquatic life criteria that are the basis for the effluent limits in the violated permits themselves provide sufficient protection, even in light of overwhelming evidence that they do not.

Of course, stormwater and other sources of toxic pollutants are a statewide concern, not limited to Puget Sound. EPA likely is aware of, for example, the consultation on the Salmon Creek Interchange project in Clark County.²⁰ In that biological opinion, NMFS highlighted its concerns about copper and zinc, pointing out, *inter alia*, the unprotectiveness of Washington's criteria:

[w]hen they compared their results to the acute U.S. Environmental Protection Agency (EPA) Water Quality Criteria for dissolved copper (13 µg/L for 100 mg/L hardness), Baldwin et al., (2003) determined that a one-hour discharge at the acute EPA Water Quality Criteria could be expected to cause up to a 50 percent loss of sensory capacity among coho salmon in freshwater habitats.

Id. at 21. NMFS also expressed concern that avoidance of chemical plumes could force fish to leave refugia, citing studies of observed avoidance response to copper at 0.1 µg/L (hardness of 90 mg/L), and going on to say that

EPA (1980) also documented avoidance by rainbow trout fry of copper concentrations as low as 0.1 µg/L during a 1 hour exposure, as well as a Lethal Concentration at which 10 percent of the smolts exposed to 7.0 µg/L for 200 hours died, and a LC10 for juveniles in the swim-up stage exposed to 9.0 µg/L for 200 hours.

Id. NMFS concluded that "[a]t 10 µg/L, a concentration which will regularly occur in outfall effluent, responsiveness was reduced by 67 percent within 30 minutes, an exposure time that is less than typical discharge times for BMP outfalls." *Id.* Similarly, in that same opinion, NMFS discussed avoidance by salmonids of zinc, noting that "sublethal effects occur at concentrations approximately 75 percent less (5.6 µg/L) than lethal effects (24 µg/L) (EPA 1980; Hansen, et al.

¹⁹ EPA, *EPA focusing on industrial stormwater compliance, targeting a serious threat to Puget Sound water quality* (Aug. 26, 2013), <http://yosemite.epa.gov/opa/admpress.nsf/0/0DD4BD2F905BCAE885257BD3006EA57B> (last visited Aug. 13, 2015).

²⁰ NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Salmon Creek Interchange Improvement Project, Clark County, Washington. (6th Field HUCs, Salmon Creek 170800010901)* (March 20, 2009), available at https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/NWR-2008-1199?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH (last viewed Aug. 20, 2015).

2002). Even relatively low concentrations (5.6 µg/L, established for juvenile rainbow trout) resulted in avoidance of the plume.” *Id.* The NMFS thresholds for copper (2.0 µg/l over background levels of 3.0 µg/L or less) and zinc (5.6 µg/L over background zinc concentrations between 3.0 µg/L and 13 µg/L) were also cited in 2013 comments by NMFS on a draft NPDES permit for an industrial discharge to the Columbia River, along with comments on other toxic pollutants.²¹

None of this should be surprising. NMFS provided EPA with its scientific rationale concerning copper many years ago.²² In a letter commenting on a proposed industrial stormwater general permit for over 1,100 industrial facilities in Washington State, NMFS reminded EPA of its oversight role in permitting and pointed out that NMFS had previously brought the same issues to EPA’s attention regarding EPA’s proposed issuance of the national multi-sector general permit for stormwater discharges.²³ Highlighting copper, NMFS attached a copy of its 2007 technical white paper on applying a benchmark concentration for dissolved copper. NMFS noted to EPA that “[t]he paper concludes that benchmark concentrations (calculated using EPA methodology) ranging from 0.18 to 2.1 µg/L of dissolved copper in fresh water result in reductions of 9 to 57 percent in predator avoidance by juvenile salmon.” *Id.* at 2.²⁴ The

²¹ See NMFS, Letter from Kim Kratz, Assistant Regional Administrator West Coast Region/Oregon and Washington Coastal Area Office to Shingo Yamazaki, Industrial Section, Washington Department of Ecology, Re: Weyerhaeuser NPDES Concerns, Permit WA-0000124 (Dec. 20, 2013).

²² See Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS, to Mike Gearheard, Director Office of Water and Watersheds, EPA Region 10 (May 4, 2007), *available at* <http://www.ecy.wa.gov/programs/wq/stormwater/industrial/iswgpdraftpubcom/2007/nmfs.pdf> (last viewed Aug. 24, 2015). We note that the Washington Department of Ecology is also clearly aware of this document as it was submitted as a comment during the 2007 public comment period. See Ecology, Water Quality, Industrial Stormwater General Permit, Historical Information, *available at* <http://www.ecy.wa.gov/programs/wq/stormwater/industrial/iswgpdraftpubcom/2007/nmfscopper2.pdf> (last viewed Aug. 24, 2015).

²³ See Letter from Angela Somma, Chief, Endangered Species Division, NMFS to James A. Hanlon, Director Office of Wastewater, EPA, Re: Docket ID No. OW-2005-0007 (Feb. 15, 2006) *available at* <http://www.ecy.wa.gov/programs/wq/stormwater/industrial/iswgpdraftpubcom/2007/nmfs3.pdf> (last viewed Aug. 24, 2015).

²⁴ For EPA’s better understanding of the role of copper in suppressing predator avoidance behavior, we have attached a short video. See Salmon fry with copper video (obtained from NMFS). The video shows two tanks with salmonid fry, one with zero copper and with copper at a concentration of 10 µg/l. At the point when the light in the top center of the screen changes from green, for “before alarm odor,” to red, “alarm odor added,” indicating the presence of a predator, the fry in the copper-free tank can be observed taking immediate predator avoidance response action, namely by ceasing all movement. The fry in the copper-contaminated tank continue swimming rapidly, obvious to the need to respond to the threat of a predator.

technical paper²⁵ cited a “large body of scientific literature” that has shown that fish behaviors can be disrupted at concentrations of dissolved copper in a range that “fall[s] within the range of other sublethal endpoints affected by [dissolved copper] such as behavior, growth, and primary production, which is 0.75–2.5 µg/L.” *Id.* at ix. NMFS also cited copper’s adverse effects on salmonid disease and stress resistance. *Id.* at 31-32. Finally, the technical paper made clear the regulatory ramifications of Washington’s inadequate aquatic life criteria for copper:

Point and nonpoint source discharges from anthropogenic activities frequently exceed these [NMFS] thresholds by one, two, and sometimes three orders of magnitude, and can occur for hours to days. The U.S. Geological Survey ambient monitoring results for [dissolved copper] representing 811 sites across the United States detected concentrations ranging 1–51 µg/L, with a median of 1.2 µg/L. Additionally, typical [dissolved copper] concentrations originating from road runoff from a California study were 3.4–64.5 µg/L, with a mean of 15.8 µg/L. Taken together, the information reviewed and presented herein indicates that impairment of sensory functions important to survival of juvenile salmonids is likely to be widespread in many freshwater aquatic habitats. Impairment of these essential behaviors may manifest within minutes and continue for hours to days depending on concentration and exposure duration. Therefore, [dissolved copper] has the potential to limit the productivity and intrinsic growth potential of wild salmon populations by reducing the survival and lifetime reproductive success of individual salmonids.

Id. at x. NMFS concluded that “more than minor detrimental effects on salmon and their prey base will occur” from the proposed issuance of the Washington industrial stormwater permit. Letter, *supra* n. 22, at 2. Subsequently, in 2008, NMFS again wrote EPA concerning the draft permit, and again highlighting the hazards of copper and zinc and reminding EPA of its obligations under the Endangered Species Act. NMFS pointed to the inadequacy of the Washington water quality standards, concluding that it expected to “engage in further discussions that should help inform both national water quality standards and state water quality standards. We expect that consultation to consider not only copper but also other heavy metals of concern.”²⁶ Finally, the next year, NMFS again wrote EPA, exhibiting even greater frustration :

²⁵ NMFS, *An Overview of Sensory Effects on Juvenile Salmonids Exposed to Dissolved Copper: Applying a Benchmark Concentration Approach to Evaluate Sublethal Neurobehavioral Toxicity*, NOAA Technical Memorandum NMFS-NWFSC-83 (Oct. 2007), available at http://www.nmfs.noaa.gov/pr/pdfs/consultations/copper_salmon_nmfsnwfsc83.pdf (last viewed Aug. 20, 2015).

²⁶ Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS, to Mike Gearheard, Director Office of Water and Watersheds, EPA Region 10 (Jan. 10, 2008) available at <http://www.ecy.wa.gov/programs/wq/stormwater/industrial/iswgpdraftpubcom/jan2008/noaa.pdf> (last viewed Aug. 24, 2015) at 2; *see also id.*, Attachment A at 1 (noting effects of zinc occur at 10 to 20 times lower than the permit benchmarks and that effects of copper for dischargers to impaired waters would be 3.5 and 14 times higher than levels at which copper and zinc cause adverse effects to salmon, respectively).

We have identified in the past through meetings, e-mails, and correspondence (between NMFS, EPA and Ecology) our concerns about copper and zinc levels allowed by this permit. Adverse effects of dissolved copper and zinc on listed salmon occur at very low levels (values ranging from 0.18 to 2.1 µg/L in freshwater for copper (Hecht et. al, 2007) and at 5.6 µg/L in freshwater for zinc (Sprague 1968)). Adverse effects of copper include interference with fish sensory systems and important behaviors that underlie predator avoidance, juvenile growth and migratory success. These effects occur at pollutant levels that are 6 to 77 times lower than the proposed benchmark level for total copper (14 µg/L). Similarly, adverse effects of zinc include altered behavior, blood and serum chemistry, impaired reproduction, and reduced growth. These effects occur at pollutant levels that are 35 and 45 times lower than the proposed total zinc benchmark levels (200 µg/L for Western Washington and 255 µg/L for Eastern Washington). In addition, the proposed benchmark level for zinc in this permit (200 and 255 µg/L total Zn) is higher than the level proposed for the 2007 Industrial permit (115 µg/L total Zn). We do not believe these proposed benchmark levels avoid more than minor detrimental effects to listed salmon and steelhead.

Given that copper has adverse effects on listed fish at very low levels, we are surprised that Ecology has proposed in this permit to eliminate the requirement for facilities to conduct monitoring for copper when zinc benchmarks are exceeded in stormwater discharges. Instead Ecology is proposing to use total zinc as the representative metal for core sampling and apply copper sampling requirements to only 5 sectors of industrial facilities. With the proposed benchmark level for zinc set at a level that does not provide protection necessary for salmon growth and survival, and with copper being identified as a widespread pollutant in industrial facilities, we do not believe using zinc as a surrogate of copper and limiting copper monitoring to 5 sectors will adequately protect listed salmon.²⁷

As EPA knows, it has not completed consultation with NMFS, or with U.S. Fish and Wildlife Service on national recommended criteria and it has taken no action to consult on, let alone revise, Washington's water quality criteria for the protection of aquatic life from toxic pollutants.

Sediment Contamination Regulation

Finally, as EPA knows, sediment contamination by toxic pollutants is a serious problem in Puget Sound and throughout the state. New and revised aquatic life criteria play an important role in ensuring that Washington's sediment quality program works to protect aquatic life. Just as in the CWA, Washington's sediment management standards require an annual review and triennial

²⁷ Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS to Mike Gearheard, Director Office of Water and Watersheds, EPA Region 10 (July 15, 2009) available at <http://www.ecy.wa.gov/programs/wq/stormwater/industrial/iswgpdraftpubcom/june2009/noaa.pdf> (last viewed Aug. 24, 2015) at 1.

updating. *See* WAC 173-204-130(6). When evaluating the need for “necessary revisions,” Ecology is required to consider, *inter alia*, “[n]ew state or federal laws which have established environmental or human health protection standards applicable to surface sediment.” WAC 173-204-130(7), (7)(d). This would include new and revised aquatic life criteria adopted or approved by EPA. These sediment quality criteria address many of the pollutants for which EPA had new or updated national recommended 304(a) criteria since 1992, as discussed at page 59 of NWEA’s 2013 petition.²⁸ In addition, new or revised aquatic life criteria, were they adopted by or for Washington, could be considered “requirements in other applicable laws” that set both the clean-up screening levels and sediment clean-up objectives used to establish upper and lower limits of clean-up standards. *See* WAC 173-204-560(3)(iv), 4(iv). EPA’s action to update Washington’s aquatic life criteria would thus have a significant beneficial impact on the state’s sediment quality regulations and meeting program goals.

Conclusion

In summary, EPA is well aware of the implications of using Washington’s outdated aquatic life criteria in Clean Water Act regulatory programs and associated efforts to attain and maintain water quality to protect designated uses in Washington’s waters. As our 2013 petition made clear, using these out-of-date aquatic life criteria for section 303(d) water quality assessments, NPDES discharge permits, Total Maximum Daily Load (TMDL) clean-up plans, and other regulatory actions is reprehensible, particularly given the importance of restricting toxic pollutants to allow for the recovery of threatened and endangered species.

Once again, we urge you to grant our petition to update and revise Washington’s aquatic life criteria.

Sincerely,



Nina Bell
Executive Director

cc: Ken Kopocis, Deputy Assistant Administrator for Water
Betsy Southerland, Director, Office of Science and Technology
Sara Hisel-McCoy, Director, Standards and Health Protection Division
Betsy Behl, Director, Health and Ecological Criteria Division
Dennis McLerran, Regional Administrator Region 10 (attachments by mail)
Dan Opalski, Director, Region 10 Office of Water and Watersheds
Angela Chung, Manager, Region 10 Water Quality Standards Unit

²⁸ *See* WAC 173-204-320 (marine sediment quality standards established for pollutants such as copper, zinc, lead, cadmium, chromium); WAC 173-240-420 (same for sediment impact zone maximum criteria); WAC 173-204-562 (same for marine sediments cleanup objectives and cleanup screen levels chemical criteria); WAC 173-204-563 (same for freshwater sediment cleanup objectives and cleanup screening levels chemical criteria).

Attachments (on compact disk):

1. FWS, *Biological Opinion for the Idaho Water Quality Standards for Numeric Water Quality Criteria for Toxic Pollutants*, 01EIFW00-2014-F-0233 (June 25, 2015).
2. NMFS, *Final Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Water Quality Toxics Standards for Idaho* (May 7, 2014).
3. NMFS, *Jeopardy and Adverse Modification of Critical Habitat Biological Opinion for the Environmental Protection Agency's Proposed Approval of Certain Oregon Administrative Rules Related to Revised Water Quality Criteria for Toxic Pollutants* (Aug. 14, 2012).
4. EPA, *Puget Sound Georgia Basin Transboundary Ecosystem Indicator Report* (2006)
5. EPA, NMFS, *Potential Effects of PBDEs on Puget Sound and Southern Resident Killer Whales A Report on the Technical Workgroups and Policy Forum* (July 24, 2013)
6. EPA, *Puget Sound Georgia Basin Ecosystem Indicator Report, Executive Summary Marine Species at Risk* (Oct. 2006)
7. EPA, *Puget Sound Georgia Basin Ecosystem Indicator Report, Executive Summary, Toxics in Harbor Seals* (Oct. 2006)
8. EPA, *Salish Sea, Southern Resident Killer Whales*
9. EPA, *Salish Sea, Toxics in the Food Web: Pacific Herring and Harbor Seals*
10. NMFS, *Recovery Plan for Southern Resident Killer Whales (Orcinus orca)* (Jan. 17, 2008)
11. NMFS, *Southern Resident Killer Whales: 10 Years of Research & Conservation* (June 2014)
12. NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the on-going National Flood Insurance Program carried out in the Puget Sound area in Washington State. HUC 17110020 Puget Sound* (Sept. 22, 2008)
13. WDF&W, *Toxic Contaminants in Puget Sound Fish and Shellfish*
14. Ecology, *Focus on Puget Sound, Toxics in surface runoff to Puget Sound* (May 2011)
15. Ecology, *Control of Toxic Chemicals in Puget Sound: Phase 3 Data and Load Estimates* (April 2011)
16. Ecology, *Western Washington NPDES Phase I Stormwater Permit, Final S8.D Data Characterization 2009-2013* (Feb. 2015)
17. NMFS, *Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation Evaluation of 2010-2014 Puget Sound Chinook Harvest Resource Management Plan under Limit 6 of the 4(d) Rule Impacts of Programs Administered by the Bureau of Indian Affairs that Support Puget Sound Tribal Salmon Fisheries* (May 24, 2011)
18. NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Interstate 405 State Route 169 to Interstate 90 Congestion Relief - Renton to Bellevue Improvement, King County, Washington. (6th Field HUCs, 171100120302, Cedar River and 171100120106, Lower Cedar River)* (Jan. 3, 2007)
19. NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Interstate 405 Congestion Relief and Bus Rapid Transit Projects - Renton Nickel Improvement, King County, Washington. (HUC, 171100130399, Lower Green River and 171100120106, Lower Cedar River)* (Sept. 20, 2006)

20. EPA, *EPA focusing on industrial stormwater compliance, targeting a serious threat to Puget Sound water quality* (Aug. 26, 2013)
21. NMFS, *Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Salmon Creek Interchange Improvement Project, Clark County, Washington. (6th Field HUCs, Salmon Creek 170800010901)* (March 20, 2009)
22. NMFS, Letter from Kim Kratz, Assistant Regional Administrator West Coast Region/Oregon and Washington Coastal Area Office to Shingo Yamazaki, Industrial Section, Washington Department of Ecology, Re: Weyerhaeuser NPDES Concerns, Permit WA-0000124 (Dec. 20, 2013)
23. NMFS, *An Overview of Sensory Effects on Juvenile Salmonids Exposed to Dissolved Copper: Applying a Benchmark Concentration Approach to Evaluate Sublethal Neurobehavioral Toxicity*, NOAA Technical Memorandum NMFS-NWFSC-83 (Oct. 2007)
24. Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS, to Mike Gearheard, Director Office of Water and Watersheds, EPA Region 10 (May 4, 2007)
25. Letter from Angela Somma, Chief, Endangered Species Division, NMFS to James A. Hanlon, Director Office of Wastewater, EPA, Re: Docket ID No. OW-2005-0007 (Feb. 15, 2006)
26. Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS, to Mike Gearheard, Director Office of Water and Watersheds, EPA Region 10 (Jan. 10, 2008)
27. Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS to Mike Gearheard, Director Office of Water and Watersheds, EPA Region 10 (July 15, 2009)
28. Salmon fry with copper video (obtained from NMFS)